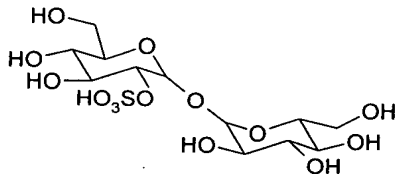
REMARKS

The present amendment corrects several clerical errors that have recently been detected by applicants. In particular, the formula for Trehalose and its corresponding derivatives have been corrected.

As is readily apparent to one skilled in the art, the formula was incorrect. Rather, Trehalose is namely of formula:



This is supported by the article *Carbohydrates*, Lichtenthaler et al., page 8, 2005, Wiley VCH-Verlag GmbH and Co (attached herewith). It is noted that the formula disclosed on page 8 of *Carbohydrates* is an alternative representation of the formula given above.

As a result, the skilled person would have immediately realized the mistake in the structure proposed for Trehalose in the application as filed. Moreover, the skilled person would have readily understood the needed correction, i.e., the correct representation of Trehalose in the formulas.

The two structures given on pages 4 and 22 were identical. Thus, the redundant structure has been removed.

Favorable consideration of the present application is respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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APPENDIX:

The Appendix includes the following item(s):

- *Carbohydrates*, Lichtenthaler et al., page 8, 2005, Wiley VCH-Verlag GmbH and Co

Carbohydrates

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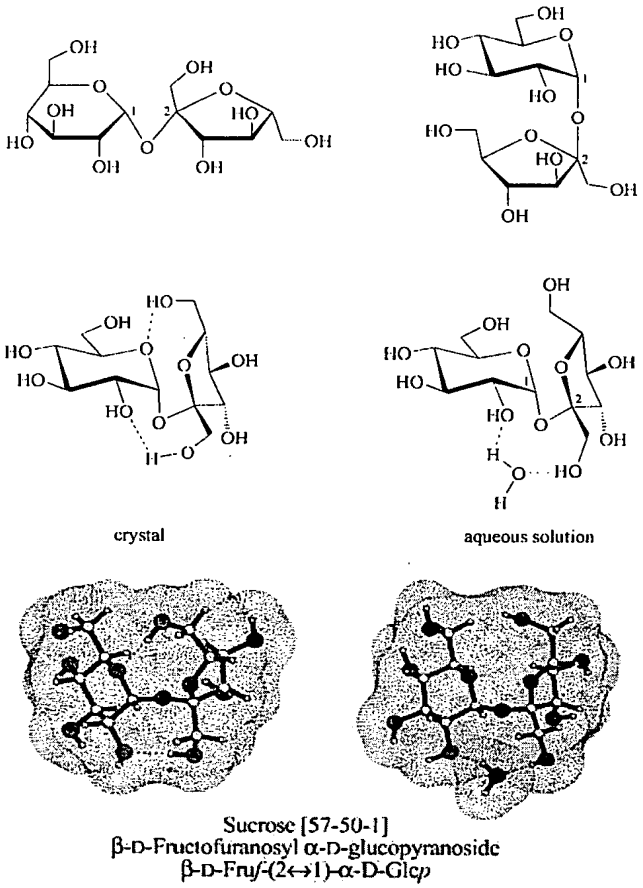
1. Introduction

Terrestrial biomass constitutes a multifaceted conglomeration of low and high molecular mass products, exemplified by sugars, hydroxy and amino acids, lipids, and biopolymers such as cellulose, hemicelluloses, chitin, starch, lignin and proteins. By far the most abundant group of these organic products and materials, in fact about two thirds of the annually renewable biomass, are carbohydrates, i.e., a single class of natural products. As the term 'carbohydrate' (German *'Kohlenhydrate'*; French *'hydrates de carbone'*) implies, they were originally considered to consist solely of carbon and water in a 1:1 ratio, in recognition of the fact that the empirical composition of monosaccharides can be expressed as $C_n(H_2O)_n$. Today, however, the term is used generically in a much wider sense, not only comprising polysaccharides, oligosaccharides, and monosaccharides, but substances derived thereof by reduction of the carbonyl group (alditols), by oxidation of one or more terminal groups to carboxylic acids, or by replacement of one or more hydroxyl group(s) by a hydrogen atom, an amino group, a thiol group, or similar heteroatomic groups. A similarly broad meaning applies to the word 'sugar', which is often used as a synonym for 'monosaccharide', but may also be applied to simple compounds containing more than one monosaccharide unit. Indeed, in everyday usage 'sugar' signifies table sugar, which is sucrose (German *'Saccharose'*; French *'sucrose'* or *'saccharose'*), a disaccharide composed of the two monosaccharides D-glucose and D-fructose.

Carbohydrates appear at an early stage in the conversion of carbon dioxide into organic compounds by plants, which build up carbohydrates from carbon dioxide and water by photosynthesis. Animals have no way of synthesizing carbo-

10.1002/14356007.a05_079

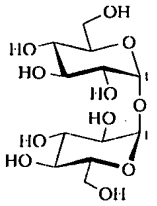


Sucrose [57-50-1]
β-D-Fructofuranosyl α-D-glucopyranoside
β-D-Fruf-(2↔1)-α-D-Glcp

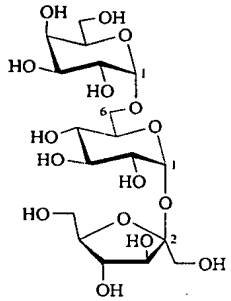
Figure 10. Common structural representations of sucrose (top entries), the molecular geometry realized in the crystal featuring two intramolecular hydrogen bonds between the glucose and fructose portion [18], [19] (bottom left), and the sterically similar disposition of the two sugar units towards each other in aqueous solution form, caused by hydrogen bonding through a 'water bridge' [25]. The bottom entries show the solvent-accessible surfaces (dotted areas) of the crystal form (left) and the form adopted in water [25] (right), clearly demonstrating that sucrose has an unusually compact overall shape, more so than any other disaccharide.

cycle. Similarly nonreducing, due to being a galactosylated sucrose, is the trisaccharide *raffinose*, distributed almost as widely in the plant kingdom as sucrose, yet in lower concentration (e.g., less than 0.05 % in sugar beets).

There are only very few naturally occurring oligosaccharides with a free anomeric hydroxyl group, which therefore possess reducing properties. The most important example is *lactose* (milk sugar, → Lactose and Derivatives), an ingredient of the milk of mammals (up to 5 % in cows). As it is produced on an industrial scale from whey, it represents the only large-scale



α,α-Trehalose [99-20-7]
α-D-Glucopyranosyl
α-D-glucopyranoside
(α-D-Glcp[1↔1]α-D-Glcp)



Raffinose [512-69-6]
α-D-Galactopyranosyl-
(1→6)-sucrose
(α-D-Galp-(1→6)-α-D-
Glcp(1↔2)-β-D-Fruf)